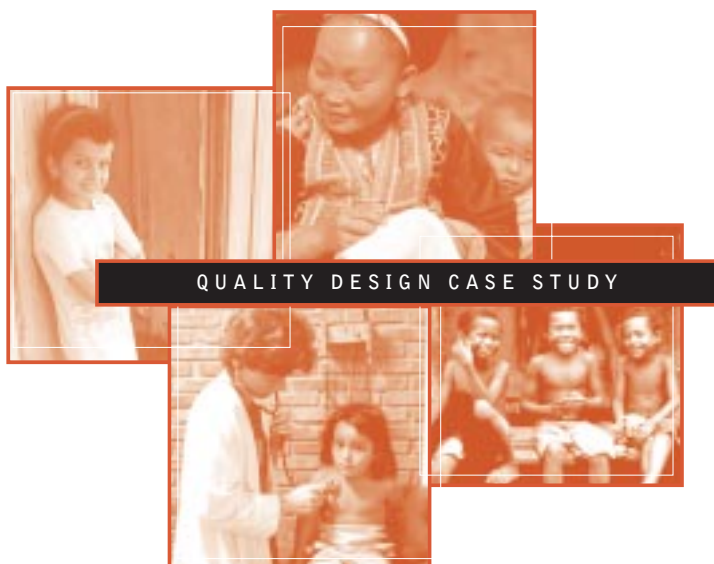


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## Designing Obstetric Services to Reduce Maternal Mortality in Guatemala



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## QUALITY ASSURANCE PROJECT

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The Quality Assurance Project (QAP) is funded by the U.S. Agency for International Development (USAID), under Contract Number HRN-C-00-96-90013. QAP serves countries eligible for USAID assistance, on USAID Missions and Bureaus, and other agencies and nongovernmental organizations that cooperate with USAID. The QAP team consists of the Center for Human Services (CHS), the prime contractor; Joint Commission International (JCI); Johns Hopkins University School of Hygiene and Public Health (JHSPH), Johns Hopkins University Center for Communication Programs (JHU/CCP); and the Johns Hopkins Program for International Education in Reproductive Health (JHPIEGO). Together, they provide comprehensive, leading-edge technical expertise in the design, management, and implementation of quality assurance programs in developing countries. The Center for Human Services, the nonprofit affiliate of University Research Co., LLC, provides technical assistance in the research, design, management, improvement, and monitoring of healthcare systems and service delivery in over 30 countries.



## About this series

**The Case Study** series presents real applications of Quality Assurance (QA) methods in developing countries at various health system levels, from national to community. The series focuses on QA applications in maternal and reproductive health, child survival, and infectious diseases. Each case study focuses on a major QA activity area, such as quality design, quality improvement, communication and development of standards, and quality assessment. In some cases more than one QA activity is presented.

**Quality design** is the systematic creation of new services or processes or the re-design of existing ones. It incorporates features that meet the needs of internal and external clients while taking into account the resources available. In healthcare, external clients include the individuals who use specific services, their caretakers, and their families, but may also include members of the larger community. Internal clients could include healthcare providers, community-based workers, support staff, supervisors, or managers. Quality design is undertaken by a team that can include both internal and external clients of the service to be designed.

The Quality Assurance Project has developed a quality design methodology that teams can use to select a process and then identify all clients and their needs, clearly set objectives for the design, create a design that addresses those needs, and implement and monitor the new design.

**This case study** describes the quality design experience of seven hospitals in Guatemala, using the Sololá Hospital to illustrate some of the specific steps in the process.



## Acknowledgments

The Guatemala Ministry of Health (MOH) implemented the work described in this case study. This case study was written by Herbert Durán and Sergio Fuentes, hospital facilitators, QAP/Guatemala, with writing support from Joanne Ashton and Ya-Shin Lin. Technical review was provided by Joanne Ashton, Karen Askov, Carlos Gonzáles, Ya-Shin Lin, Caroline Quijada, and Diana Silimperi.

## Recommended citation

Durán H and Fuentes S. 2000. Designing Obstetric Services to Reduce Maternal Mortality in Guatemala. Quality Assurance Project Case Study. Published for the U.S. Agency for International Development (USAID) by the Quality Assurance Project (QAP): Bethesda, Maryland, U.S.A.





# Designing Obstetric Services to Reduce Maternal Mortality in Guatemala

## Background

For every 100,000 births in Guatemala, approximately 190<sup>1</sup> women die from pregnancy-related causes.

The principal causes of maternal mortality—hemorrhage, pregnancy-induced hypertension, and abortion-related complications—are treatable, if not preventable, if quality maternal care services are available, accessible, and known to the community. The evidence shows that maternal mortality can be reduced if a system is in place to transport women in labor to a facility within 30 minutes where there are antibiotics, blood transfusion and cesarean section capacities—i.e., elements of essential obstetric care.<sup>2</sup>



To improve access and quality of obstetric care services, the Guatemala Ministry of Health and QAP undertook a joint initiative in February 1999. The first stage of the project was targeted at seven public hospitals<sup>3</sup> in March 1999. The goal of

<sup>1</sup> National Maternal and Child Survey, 1995.

<sup>2</sup> Wagner M. Maternal mortality in the United States: Where are the doctors? *Birth Gazette*, 1997 Fall; 13(4)37-8.

<sup>3</sup> San Marcos, Malacatán, Sololá Coatepeque, Chimaltenango and Totonicapán National Hospitals, and the Quetzaltenango Regional Hospital.

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the quality design effort at these hospitals was to create client-driven obstetric care services that would improve quality of maternal care, with the longer-term vision of decreasing maternal mortality.

The following sections describe how hospital-based teams used the quality design methodology to design or re-design hospital processes in obstetric care. The quality design methodology guides teams to identify client needs, set design objectives, create a design that addresses the needs, and implement and monitor the new design.

## Assembling, Training, and Organizing Quality Design Teams (includes Step 1)

**Selection of facilitators.** The first step in the quality design work was to identify two in-country facilitators to guide the quality design teams and provide technical assistance as needed. Both chosen facilitators were physicians with strong interpersonal and communication skills.

**Obtaining support from hospital management.** QAP then held a seminar with Ministry of Health staff, as well as area and hospital directors to introduce the concept of using quality design to improve hospital services. During this seminar, the management of each hospital committed to carry out quality design work at their hospitals via a multidisciplinary quality design team. At a subsequent meeting led by each director at his hospital, QAP trainers and an assigned facilitator introduced key leaders and staff of the respective Obstetrics-Gynecology Departments to quality design. They also encouraged staff interested in participating in the design work to contact the hospital director after the meeting. Each hospital director then selected the members of the team among interested staff, based on level of interest in quality design, experience with obstetric services, and leadership ability. Selected staff was then invited to participate in two workshops on the methodology of quality design.

**Initial training.** In March 1999, 42 staff members from the seven hospitals participated in a 4-day workshop on quality design. During the workshop, each team chose a sample

process at their hospital that could be redesigned. They were then introduced to nine out of the 10 quality design steps. Immediately after learning each step, teams applied what they had learned to their sample process to practice the methodology. This hands-on approach gave participants a good understanding of each step's function.

### **The Ten Steps of Quality Design<sup>4</sup>**

- 1) Select process to be designed.
- 2) Identify internal and external clients.
- 3) Identify and prioritize client needs and expectations.
- 4) Define objective of new design.
- 5) Create flowchart of main activities of process.
- 6) Link client needs with each activity on flowchart.
- 7) Identify key elements of new design that respond to priority client needs, for each activity.
- 8) Describe new process.
- 9) Error proof: test design for robustness and reliability.
- 10) Plan, implement, and monitor new process.

### **Selection of the process to be redesigned (Step 1).**

After the workshop, each team convened a preliminary meeting at its hospital to decide whether to continue to work with the process identified at the workshop or to select another process. As a result, two hospitals decided to work on improving the reception and triage of obstetric patients, two selected labor monitoring, and the remaining three chose to focus on obstetric surgery, obstetric clinic admissions and postpartum care. Next, team members assessed whether

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<sup>4</sup> This case study focuses on the broad process of implementing quality design at the national level. For a more detailed account of the 10 quality design steps, please refer to case studies on quality design at the single hospital or health center team level.

there were hospital staff directly involved with the selected process that should be added to the team.

**Initiation of formal team work.** Over the following five months, during weekly sessions lasting 1-3 hours, each team reworked the first nine design steps with a facilitator to fully develop their designs. At their first meeting, teams elected members to fill the roles of coordinator to oversee logistical issues, and secretary to take minutes and keep all documentation of the team's work. The coordinator was also in charge of gathering members for meetings, ensuring that meetings started on time, keeping the group on task, and making sure that all opinions were expressed and heard.

## Identifying and Prioritizing Client Needs (includes Step 2-3)

**Conducting focus groups.** First, each team identified the internal and external clients of the process selected (Step 2). Then, each team conducted two in-hospital focus groups to determine the needs and requirements of each type of client (Step 3). External clients were enrolled by the coordinator

### Step 3 — Identifying and prioritizing client needs and expectations, a care delivery example from Sololá Hospital

#### External Client Needs

<i>Patient</i>	Information, good treatment, interpreter, education, physical hygiene, immediate attention, exclusive labor area, privacy, staff, drugs, appropriate clothing, hot water shower
<i>Family</i>	Information, interpreter, education, communication, good treatment, efficiency, orientation
<i>Midwife</i>	Information, orientation, education, good treatment

#### Internal Client Needs

<i>Auxiliary nurse</i>	Available time, appropriate equipment, name tag, appropriate clothes, kindness, good treatment, patience, exclusive labor area
<i>Nurse</i>	Available time, appropriate equipment, name tag, appropriate clothes, kindness, good treatment, patience, exclusive labor area, staff
<i>Doctors</i>	Available time, inputs, protocols, continuous education, appropriate equipment, patience, good treatment, kindness, efficiency, accurate and precise diagnostic, exclusive labor area

during their medical visits to participate in focus groups. Team members moderated and observed these 90-minute sessions, using a structured discussion guide developed by each team.

**Prioritizing client needs.** Next, each team prioritized the client needs (Step 3) via a multi-voting procedure. With the focus group results in mind, team members anonymously voted for the three needs he or she felt were most important, assigning one to three points to each, in order of importance. The three needs with the greatest number of points were then identified.

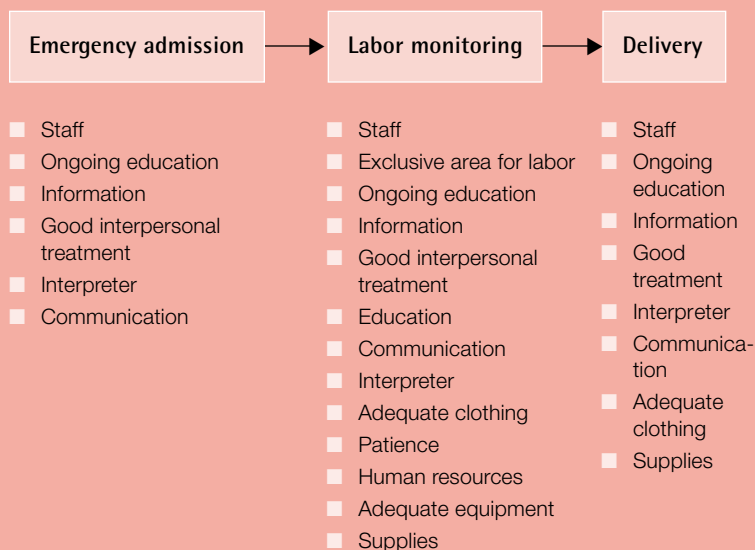


## Redesigning the Process (includes Steps 4-9)

**Defining objective of new design.** Each team defined in writing the objective of its new design (Step 4), based on the client needs identified from the focus groups. The following is an example from Sololá:

*The National Hospital of Sololá does not have a labor monitoring area. The new labor monitoring design will provide better attention to the patient in labor by creating an area exclusively for the control and management of labor, where patients will be treated well and with efficiency, kindness, and privacy. The goal of labor monitoring will be to detect obstetric risks in order to decrease maternal and perinatal morbidity and mortality.*

## Steps 5 and 6 — High-Level Flowchart and Linking Client Needs With Main Flowchart Activities, a Care Delivery Example from Sololá Hospital



*The new labor monitoring area will be implemented in a space adjacent to the delivery room, completely closed, permitting the exclusive entrance of authorized obstetric care staff.*

**Flowchart analysis.** They then created a high-level flowchart (Step 5) of the process to be designed, which involved defining the main activities of the process in order of occurrence.

**Identification of key features.** Teams linked each client need with a main activity (Step 6) and described key features needed for each activity that would address these needs (Step 7). Once key features were compiled, teams described in writing how the overall new process would work (Step 8).

## Step 7 — Identifying Key Features for each Main Flowchart Activity, a Care Delivery Example from Sololá Hospital

EMERGENCY ADMISSION	LABOR MONITORING	DELIVERY
<p>Upon arrival at hospital, the obstetric patient is taken to the emergency room in a wheelchair or gurney by the hospital security guard. The auxiliary nurse receives her with care and respect and talks to her in her own language. Next, the auxiliary nurse provides her with a hospital gown for the clinical evaluation, takes her vital signs and informs the doctor so that she can be evaluated for admission. The auxiliary nurse informs her family about her current condition. After medical orders are given, the patient is moved immediately to a wheelchair or gurney by the auxiliary nurse. The midwife or a family member then accompanies her to the area of labor and delivery.</p>	<p>Upon entrance, the patient is received quickly, efficiently, and with care to the transition area by the nursing staff, who gives her a gown used exclusively in this area. The patient is then taken to one of the two labor monitoring rooms: one for low risk pregnancies, with 5 beds, and a second for high risk pregnancies, with 2 beds. Both rooms provide privacy. In addition, there is a newborn transition room, with 4 cribs, and a storage room for drugs and surgical equipment.</p> <p>The door to the labor area remains closed, with access via a doorbell. Entrance to the labor room is restricted to staff working in the room and midwives accompanying a patient. Labor room staff and visiting midwives need to wear appropriate clothing. A changing room is located in the transition area.</p>	<p>The delivery room is adjacent to the labor room, which has two gurneys for delivery. The patient is taken immediately on a gurney to this room for delivery, in a manner that is caring, efficient, and private. After delivery, both mother and newborn are taken to their respective transition areas, where both remain for 2 hours. After this observation period, they are given identification bracelets and taken to the general obstetric ward.</p> <p>An auxiliary nurse, a nurse, and an obstetrician staff the labor and delivery rooms.</p>

**Error proofing (Step 9).** Next, in a process called error proofing, each team analyzed the new design for potential areas in which the design could fail, discussed how errors might be avoided, and determined who would address potential problems. For example, a team that identifies language barriers could develop job aids with illustrations to explain common diseases, medical procedures, or disease prevention and/or a bilingual glossary of common questions and answers used during medical consultations. Or, a team with a design that includes a new procedure for blood drawing could organize a training session for those who will be drawing blood, and ensure that all shifts include one staff member with over two years of experience drawing blood, in case there is a problem.

Step 9 — Error proofing, a Care Delivery Example from Sololá Hospital as		
Main activity block	Potential failure	Possible causes
<i>Emergency admission</i>	Lack of: <ul style="list-style-type: none"><li>■ Doctor</li><li>■ Nurse</li><li>■ Communication</li><li>■ Drugs</li><li>■ Equipment</li></ul>	<ul style="list-style-type: none"><li>■ Doctor in operating room</li><li>■ Negligence</li><li>■ High patient to staff ratio</li><li>■ Request for drugs from pharmacy</li><li>■ Delivery samples to lab</li><li>■ Language barrier</li><li>■ Inadequate supplies</li><li>■ Equipment in poor state of maintenance</li></ul>
<i>Labor monitoring</i>	Lack of: <ul style="list-style-type: none"><li>■ Personnel</li><li>■ Equipment</li><li>■ Drugs</li><li>■ Physical space</li></ul>	<ul style="list-style-type: none"><li>■ Economic resources</li><li>■ Equipment in poor state of maintenance</li><li>■ Inadequate supplies</li></ul>
<i>Delivery</i>	Lack of: <ul style="list-style-type: none"><li>■ Personnel</li><li>■ Equipment</li><li>■ Drugs</li></ul>	<ul style="list-style-type: none"><li>■ Economic resources</li><li>■ Equipment in poor state of maintenance</li><li>■ Inadequate supplies</li></ul>

<sup>5</sup> Please see Quality Design Insights (at the end of this Case Study) for an explanation of how this step can be

The key to the success of this step is the development of concrete solutions. The example in Step 9, from the Sololá Hospital team, could have more detailed and concrete solutions. Please refer to the Quality Design Insights section (last section of case study) for clarification on how this step could be best done.

**Presentation of designs to hospital management.** The completed designs were presented to hospital authorities. Reactions were mixed. Some enthusiastic directors wanted to put the re-design in place before the tenth step was completed, while others thought that it would be more prudent to progress slowly, due to lack of resources. Overall, however, support from the directors was positive.

**Carried Out by Team<sup>5</sup>**

How to address this	Who	Necessary support
<ul style="list-style-type: none"><li>■ Get organized</li><li>■ Take drugs to the service care area</li><li>■ Interpreter</li><li>■ Ask for adequate equipment</li></ul>	<ul style="list-style-type: none"><li>■ Medical chief</li><li>■ Nursing supervisor</li><li>■ Department head</li></ul>	<ul style="list-style-type: none"><li>■ Management</li><li>■ Administrative manager</li></ul>
<ul style="list-style-type: none"><li>■ Get organized</li><li>■ Ask for personnel</li><li>■ Ask for equipment</li></ul>	<ul style="list-style-type: none"><li>■ Nursing supervisor</li><li>■ Department head</li></ul>	<ul style="list-style-type: none"><li>■ Management</li><li>■ Administrative manager</li></ul>
<ul style="list-style-type: none"><li>■ Get organized</li><li>■ Ask for personnel</li><li>■ Ask for equipment</li></ul>	<ul style="list-style-type: none"><li>■ Nursing supervisor</li><li>■ Department head</li></ul>	<ul style="list-style-type: none"><li>■ Management</li><li>■ Administrative manager</li></ul>

more detailed and concrete.

## Planning, Implementation and Monitoring of New Process (includes Step 10)

**Training in implementation.** In August 1999, 36 team members convened at a second workshop on Step 10 of quality design (Plan, Implement, and Monitor New Process). Using the same hands-on method as in the first workshop, team members worked through each of the four parts of this step. First, teams systematically compared elements of the current process against the new design to clarify how internal and external clients would benefit from the new design. Next, they made a complete list of material and human resources needed for each element of the design, along with the political

Step 10 — Comparison of Current Situation and New Design, a Care Delivery	
Elements of new design	Current situation
Immediate attention	Patients experience extended waiting times in emergency department after clinical evaluation
Patient transfer from emergency department	Patient is transferred to general obstetric ward area. Sometimes the patient is left in the ward without nursing staff being informed of her presence
Language	Due to lack of bilingual staff, staff does not communicate with patient in her own language
Directional signs	Inadequate signs in hospital to direct patient to emergency department and obstetrical ward
Hospital gowns	None available
Participation of midwife in labor and delivery	Occasionally, the community-based midwife participates in labor monitoring and delivery care
Medical equipment and supplies	Deficient and poorly maintained equipment

support needed and the expected source of funding. Last, they developed both a communication plan and a monitoring plan with baseline indicators. The communication plan would alert the hospital and community to the changes to be launched at the hospital. The monitoring plan would ensure that key data be collected to provide information on whether the new design results in expected improvements, and if not, where to focus troubleshooting.

After the workshop, teams were ready to implement Step 10 in full detail at weekly facilitated hospital sessions, a process that lasted from September through November.

### Very Example from Sololá Hospital

New design	Human resources	Who benefits and how
Nurse will take patient immediately to labor area after being evaluated in the emergency department	Auxiliary nurse	Patient: rapid reception
Patient will be transferred directly to the care of the auxiliary nurse in the transition area of the labor area	Auxiliary nurse	Patient: comfort, safety, privacy, immediate attention, efficiency
Medical staff and auxiliary nurses will speak to patient in her language	Doctors and auxiliary nurses	Patient and staff: improved communication and clinical evaluation
Janitor will paint clear, colored directional signs and maintain them every 3 months	Maintenance supervisor	Patient: speed, safety, confidence
Nursing staff will maintain adequate supply of clean hospital gowns, maintained by laundry and sewing staff.	Nursing staff, sewing work room, laundry	Patient: privacy, comfort, better attention
Staff will provide an atmosphere of trust and safety to the midwife and orient her in delivery care	Medical and nursing staff	Patient: comfort, trust, safety, better attention
Nursing staff will monitor supplies and medical equipment daily, replenishing and repairing as necessary	Nursing and pharmacy staff	Patient: better attention

## Guatemala Hospital Designs: Overview of Major Changes Implemented, April 2000

Hospital	Previous Situation	Current Situation
San Marcos	Obstetric patients were admitted to the emergency department where they waited to be examined along with general emergency patients. In addition, the hospital gates were occasionally unattended, preventing access to the hospital.	A separate obstetric admissions clinic has been constructed to attend to the needs of the obstetric patient and provide staff trained in obstetric care. The gate guard receives the patient and escorts her to the new clinic.
Malacatán	Obstetric patients were examined in the general emergency room, along with all other patients. The highway did not have signs directing the patient to the hospital. Furthermore, patients had to walk across an unsheltered area to reach the hospital entrance.	A new emergency obstetric clinic has been created. Signs pointing to the hospital are posted on the highway, and a new sheltered walkway protects patients from the rain as they approach the hospital.
Sololá	Obstetric patients in labor were attended in the same room as post-delivery patients. Midwives were not invited to participate in labor and delivery. Long waiting times in emergency department. Staff often could not communicate well with patients and their families due to language differences.	Patient flow rearranged to provide immediate attention to the patient. A storage room next to the post-partum room was painted and equipped to create a room exclusively for labor monitoring. Midwives are encouraged to participate in labor and delivery. Language aids are being provided to staff to assist them in communicating with patients and families.
Coatepeque	Two to three post-delivery patients and their babies often had to share a single bed. No internal hospital signs to guide patients to obstetric department. Patients often used soiled gowns and bed linen.	New patient gowns and linen were acquired to improve comfort and cleanliness. Internal hospital signs painted from emergency room to post-partum room. An unused room was rehabilitated and cleaned to be used as a second post-partum room. Due to an emergency, the room is being temporarily used for a cholera epidemic.

Hospital	Previous Situation	Current Situation
Totonicapán	There were no signs in the hospital to direct patients to the obstetric department. Gurneys and wheelchairs were often unavailable.	Signs using symbols provide directions to the obstetric department. The hospital porter is responsible for maintaining adequate transport equipment at the hospital entrance and transporting patients.
Quetzaltenango Regional	As the regional referral center, there was no exclusive operating room, so obstetric patients had long waits for surgery. This lack of capacity meant that no elective obstetrical surgery or emergency preoperative evaluation was done.	Obstetric surgery patients are evaluated by an anesthesiologist before surgery. A fully equipped operating room is now functioning (see photo below). The new obstetrical suite can now accommodate elective obstetric surgery.



*The new obstetric surgery suite at Quetzaltenango Regional Hospital*

## Results

Nine months after initiating the quality design work, six teams had completed their designs (one dropped out due to lack of support from hospital management). As a result, in one hospital where pregnant women had been examined in the same emergency clinic as patients with other conditions, the women were now triaged to a separate emergency obstetric clinic offering increased privacy and comfort. At a second hospital, a new operating room was created for the exclusive use of obstetric patients. The quality design team remodeled an underused supply room to provide more space for new mothers. The table above summarizes the designs implemented in six hospitals.

Overall, the quality design teams have sparked much interest in each hospital, and teams have already identified other areas and processes to be redesigned. The success of the Guatemala experience has contributed to a new 4-year collaboration with the Ministry of Health that assures the continuity of the quality design work. The new project intends to employ a more integrated service-line approach, using teams that include members from the hospitals, clinics, and the community.

## Quality Design Insights

*Some of the lessons learned from the quality design process in Guatemala follow.*

### **A shorter, more efficient quality design method would help prevent loss of momentum in team work.**

In general, the teams started out enthusiastically, energized by the possibility of bringing positive change to their work. However, as the work progressed, teams began to lose interest due to the lengthy methodology, particularly the last step. Because teams met during working hours, meetings were often irregular due to heavy workloads, thus leading to discontinuity. The facilitators tried to alleviate this via incentives such as snacks, lunch, and awarding a prize to the team member voted “most collaborative.”

### **Benchmarking would reduce implementation time.**

Benchmarking in the broadest informal sense is the sharing of information and advice between teams. Benchmarking is of particular importance given the paucity of literature on quality design available in Spanish. Teams might have been encouraged to visit other hospitals involved in redesign during implementation to share experiences, strategies and ideas.

### **Facilitators should clearly explain to team members what to expect.**

Each team member should understand his or her role, time commitment, and what to expect at each step of the process.

- **Role** Within teams, rank and position sometimes impeded progress. Doctors, in particular, who were accustomed to working at the top of the hospital’s hierarchical structure, tended to expect their opinions to be always supported by the group. To minimize this tendency, team building activities could help identify early on the contribution each member brings to the team.

- **Time commitment** The length of time to complete quality design work will vary according to such factors as the specific design chosen, the level of team and hospital leadership commitment, the ability to mobilize resources, the frequency of team meetings, and the facilitator's experience with quality design. Teams and facilitators would profit to learn of how quickly a previous similar team worked through the ten steps.
- **What to expect** General rules and constraints should be presented as early as relevant. For example, if there are budgetary limits to designs, this should be explained during the very first step, because they will influence the design process selected. Similarly, if external sources (domestic and international NGOs, private sector, churches, etc.) will be tapped to fund the designs, teams should be informed at the outset, so that they realize that they will need to fundraise and, if necessary, receive training in this area.

As another example, facilitators should warn teams that early monitoring data needs to be interpreted carefully, since new designs result in many simultaneous changes, especially when utilization rates increase significantly. At Quetzaltenango Regional Hospital, for instance, the rate of perinatal asphyxia actually increased immediately after the implementation of an obstetric operating room design. It is possible that the increase in asphyxia was a result of lack of labor monitoring using a partogram, originating from staff belief that it was unnecessary, since surgery would take place anyway. Whatever the reason, when monitoring data do not reflect expected improvements, data should continue to be monitored closely to determine if further changes occur and whether additional data (such as partogram readings) should be collected to identify the source of the problem.

**Possible hospital staff resistance should be anticipated in future design efforts and addressed in a change-management plan.**

It has been long understood in quality assurance that staff support- and particularly leadership support- greatly facilitates implementation in the long run. In Guatemala, support from hospital staff, or the internal clients, was uneven. Teams met some resistance to change- and even suspicion- from staff during design implementation. In some hospitals, staff thought the teams were work inspection groups. However, as it became clear that the practical change emerging from the new design would improve quality of care, suspicions gradually died. While a communications plan details the audience, message, medium (talks or posters), and how staff will be informed of changes, a change-management plan would further expand on the manner this would be done. It would examine such issues as staff culture, history, reasons for resistance, key opinion leaders, and timing and develop a strategy to maximize opportunities for acceptance of change.

**Active support from hospital management should be encouraged and facilitated by specifying what leadership can do.**

Hospital directors and department heads were often very interested in the design work. Often, this interest was interpreted by the teams as increased external pressure to implement the designs. On the other hand, the San Marcos Hospital team benefited from the active support from the hospital director. His high involvement with the design work made him a resource for the team. He frequently attended meetings, personally facilitated interdepartmental communication, volunteered to orchestrate logistics for the new design, and made himself available for help with an open-door office policy. However, hospital managers may not realize how to proactively contribute to quality design work. Outlining ways hospital management can help the effort

and promoting communication exchange between management of different facilities where quality design is being implemented could help reduce this effect.

**Facilitators play a critical role in the design process and should therefore be trained well in advance so that they know the methodology along with its weaknesses and limitations.**

Since each quality design step builds on the previous ones, it is imperative that each step be performed as accurately and efficiently as possible. One way the facilitator can make certain this occurs is by redirecting the team's attention when it is off course. For example, in prioritizing client needs for the design, some teams took provider needs into consideration but not those of external clients. Other teams confused key elements of the design with client needs. Facilitators new to quality design would also benefit from increased support through more frequent training in quality design. For instance, more support during the workshops would have been helpful: facilitators found that two new facilitators could not adequately assist seven teams. In addition, the last two QD steps have shown to require more facilitator support; thus facilitators need to be prepared for them.

**Training in the quality design methodology should be reinforced when teams reach Steps 9 and 10**

**Step 9: Error proofing.** The process of error proofing involves the creation of back-up systems to concretely address potential areas of failure. This is a step that many teams found difficult to understand. To help teams better understand this step and maximize its effectiveness, more examples can be given.

Though the example followed throughout this case study (Sololá Hospital) correctly illustrates the conceptual framework of failure proofing, the team could have taken this step further by creating concrete contingency plans. Error

## Step 9 — Example of a Concrete Error-Proofing Solution

Main activity block	Potential failure	Possible causes
<i>Emergency admission</i>	Lack of: <ul style="list-style-type: none"><li>■ Nurse</li></ul>	<ul style="list-style-type: none"><li>■ High patient to staff ratio</li><li>■ Nurse attending another patient</li></ul>
<i>Labor monitoring</i>	Lack of: <ul style="list-style-type: none"><li>■ Drugs</li></ul>	<ul style="list-style-type: none"><li>■ Inadequate supplies</li><li>■ Inadequate restocking</li></ul>
<i>Delivery</i>	Lack of: <ul style="list-style-type: none"><li>■ ID bracelets</li></ul>	<ul style="list-style-type: none"><li>■ Inadequate supplies</li><li>■ Inadequate restocking</li></ul>

proofing is asking the question “what if?” For example, what if the nurse is not in the obstetric area when the security guard brings the patient to the obstetric ward as per design? A back-up plan needs to be developed. In this case, perhaps the security guard waits with the patient or is instructed to call the emergency department staff. The table above shows examples of concrete error-proofing solutions.

### Step 10: Planning, implementation and monitoring.

By the time teams started creating the monitoring plan, they had forgotten how to develop indicators and training had to be repeated. In addition, teams were instructed to develop indicators for each activity, but since this proved to be difficult and tedious, trainers recommended that only three indicators be selected to measure one input, process,

How to address this	Who	Necessary support
<ul style="list-style-type: none"> <li>■ Advance preparation</li> <li>■ If a nurse is not immediately available to receive patient, the security guard calls the emergency department to inquire about coverage. Guard will remain with patient until medical personnel are available</li> </ul>	<ul style="list-style-type: none"> <li>■ Security guard</li> </ul>	<ul style="list-style-type: none"> <li>■ New policy for security guard</li> </ul>
<ul style="list-style-type: none"> <li>■ Restocking monitoring plan</li> <li>■ Restocking sheets</li> </ul>	<ul style="list-style-type: none"> <li>■ Nursing supervisor</li> </ul>	<ul style="list-style-type: none"> <li>■ New procedure</li> </ul>
<ul style="list-style-type: none"> <li>■ Restocking plan</li> <li>■ If ID bracelets are not available, make a bracelet out of index card paper and affix to patient's wrist with string</li> </ul>	<ul style="list-style-type: none"> <li>■ Nurse attending patients</li> </ul>	<ul style="list-style-type: none"> <li>■ New procedure</li> </ul>

and output, of the selected process. Similarly, the communication plan posed difficulties because the team was accustomed to thinking only about the hospital personnel and not about groups in the community who might be interested in the changes at the hospital, such as the municipal body, the church, and other social service groups. To address these issues, more technical assistance and preparation of new facilitators during Step 10 is recommended. In addition, trainers are considering conducting more training sessions covering fewer steps to increase learning retention. This is feasible now because in-country facilitators can build on the experience of the first teams and can provide all technical assistance to teams.



## Designing Obstetric Services to Reduce Maternal Mortality in Guatemala: Summary

In 1999, the Quality Assurance Project applied quality design methodology at seven hospitals in the highlands of Guatemala. In a country where reducing maternal mortality rates was a Ministry of Health (MOH) priority, the focus of the redesign was improving the quality of obstetrical care in the hospital. Quality design teams were formed and trained at each hospital. Each team identified a particular area of concern for its facility, for example, the reception and triage of patients in labor, post-partum care, or regional surgical care. Using the design methodology, facilitators guided the teams over several months to redesign and implement improved processes of obstetrical care.